Rec'd Febr 19th

Lancaster Feby. 13. 1855

My Dear Sir:

I should have been with you at St Louis with my specimens of cactaceae for study under your supervision last fall but for a severe and protracted illness lasting me from about the last of September until near Christmas — After being ready for a week or two past the snows have blocked the roads so as to make them — if not impossible difficult & dangerous to travel.

It is my purpose now to start Monday the 19th Inst. and if nothing untoward happens I will be there soon afterwards. I directed some time ago to have specimens of wood and other things sent by express from Washington to you directly for fear I might not receive them in time to bring them with me: I hope you have received them — Most Respectfully yours

Dr. G. Engelmann  J. M. Bigelow

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MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

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Rec'd April 13th 1855
Ans April 20

— Lecont
— Engelmann
~~Gray~~
~~Josephine~~

Davenport Tuesday Apl 10th

My Dear Doctor! —

I arrived here safely this morning in good health and find Dr. Parry & his family all well. — Enclosed you will find answers to your list of questions. — In looking over our cactaceae I find a stray leaf of our notes on Opuntiae which though not very important may be of use to you & therefore I enclose it also. —

By the way I miss my clavatae specimens and suppose they must be mislaid somewhere in your herbary. If you could continue to get it & me some time at your convenience I should be glad. — I came away also and forgot my "pansy" Please save & send me the early seeds this fall or summer. —

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12th

Dr Parry says he has no doubt but that our "tessulata" is exactly the same as his O. ramosissima. —

2nd The Ech: cylindraceus is distinct from both Ech: viridescens and E. Engelmannii. —

3rd — Cereus Engelmannii distinct from either our C. poecilocentrus or Xanthocentrus. — but I think ours are but varieties of one pretty well marked species. Dr. Parry thinks he has seen one of them on the Gila but never collected or made notes of it. —

4th Op: echinocarpa is very difficult from his O. serpentina

5th O. prolifera is very distinct from O. Bigelovii but allied to it — is certain he made no mistake with regard to his specimen of O. prolifera. — He has seen the the Bigelovii on the Gila but had

~~but had~~ not the means at hand for collecting it nor made note of it.

Please write me at Lancaster soon. — I will write from there.

Dr. Parry sends his kindest regards

Yours in haste

Most respectfully &c.

J. M. Bigelow

Dr. Geo. Engelmann

P.S. I will start for home on Thursday evening if nothing untoward happens me. —

Good night again

J. M. B. —

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Rec.d May 24th
Ans July 23 & Aug 6

Bigelow

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

Lancaster May 19. 1855

My Dear Doctor:

Your two most welcome letters of Apl 20th & May 13th are before me – the last rec.d day before yesterday and I hasten to answer them both. – My Clavatae was found snugly stowed away among my plants before I left Dr. Parry's – They were unaccount=ably overlooked, when I exhibited my specimens for his examination, and I am truly sorry for the trouble I caused you in looking for them. Thank you for seeds of Oxamoides, as well as the Goinyhrena. – I am rejoiced that you have identified the finely characteristic seeds of O. pentpinascens. – If you could succeed as well with some others? – for instance O. dulcis O. Comanchica H.C.! it would be well. That box has come at last! Well I am sorry and glad! Sorry it did not arrive before I left St. Louis – because then by examing and re-examing the specimens with you by my side to enquire and cross=question – doubt, assure – redoubt and re=assure we could at last arrive at some definite conclusions – right glad however that it came at all – better late than never! – Now for its contents – how I wish I could see your classification of them on my big table with you and plenty of time by my side!

1st Ech: Engelmannii: – I have no spines of Ech: Albsp. here to compare with the above. (Will you send me a bunch of them?) You say my first specimen of Ech: Engl: was of "low & simple growth" – I wish to re=iterate what I have always said of Ech: Engl: I never saw it simple in growth excepting when very young (probably one year old seedlings) which were the specimens brought home. – Whereas we (Wright was with me) saw hundreds of specimens of Ech: Albsp: in a region embracing a scope 50 – 80 miles in extent between El Paso & Lake Guzman (we travelled southwardly on the Chihuahua road by the way of Lake Santa Maria – the same region where Dr. Parry made his notes) every one of which were perfectly simple – not a branching, – Caespitose, – or aggregated one among them, – Another distinctive peculiarity I think Dr. Parry will bear me out in is its shape Ech: Albsp: being globose with greater tendency to a flattened head

like Ech: Lesensis & Ech: laticost: than even an ovate head much less cylindrical like Ech: Engl: & Ech: cylindraceus. –

My recollections of these were that the older ones at least are 12 inches in diameter. –

In my notes of the first specimen I obtained of this plant I say – "branching – heads globose 5–9 inches in diameter". Spines 8 or rather 7–12" I afterwards found the heads ovate 12–15 inches high 8–10 inches in diameter and finally I found them cylindrical 2–2½ feet high & still but 8 to 10 inches in diameter with over 30 heads in a bunch.

I hope our friend Schott will obtain a full suit of flowers, seeds, spines, living specimens, and notes of the Ech: alb: – By the way I like the name Ech: Parryi better. – Dr. Parry collected it some 2 months before we did – he sent us spines on his outward trip to the Gila but I do not know whether he made his notes on it when going or coming home to our Camp near El Paso. He went out in Feby. & returned in Apl. – We made our trip to Lake Guzman after Dr. P's return in Apl. – Should our friend prove successful in procuring full specimens, I am confident we will find the peculiarities of fructification as distinctive as those of Ech: Les: and Ech: laticost. –

2nd Ech: Emoryi? No notes! no recollection! a perfect know nothing! I had Emory's figures with me but have no recollection of having seen anything approaching it in appearance. Did it die in the box or was it gathered dead? Ech: Emoryi in the figure has many ribs 21, Ech: Whipplei has 13 – Can this be an intermediate making them one? Hardly! Have you seeds of Ech Emoryi? and are they different from Ech: Wisl:?

3rd Ech: Wisl? Var. Beyrichii – From Cactus Pass near head waters of Bill Williams Fork to 50 miles west of Rio Colorado I found this plant growing most generally on rocky places, sometimes in the crevices of perpendicular rocks at a considerable elevation. – At first I was doubtful – suspecting it might be distinct but a close congener of Ech: Wisl: Spines collected on Bill Williams Fork for the purpose of comparing with Ech: Wisl: Afterwards found imperfect specimens of fruit & seed from which I concluded it was nothing but Ech: Wislizeni

the want of hooks on the lower central spines was overlooked, or not noticed, or not considered important! &c. The seed you find in the box is from this plant because I collected none other. I counted 25 to 30 ribs – they vary however 20 – 30. – It resembles the El Paso plant exactly as regards size and appearance. – I measured one on Rio Williams Fork 5 ft high 18 – 24 inches diameter – I do not remember seeing the strongly hooked Ech: Wisl in this region – You ask how Le Conte & myself got over the hooks of Ech: Wisl? Why, you see, Le Conte, I suppose never saw the Ech: Wisl. with its hooks! and of course had not to get over them at all – and I – why, I'm on the hooks now! I cant get over them! for I really can hardly believe it is distinct from the eastern, or El Paso plant. – Please send me a few seeds & spines of the El Paso plant – I have only some fruit & seeds collected by some of Lt. Whipple's men from the neighborhood of the Gila when on the Boundary Survey and labelled Opunt: gigantea. It seems different from the figure of your Sonora seeds a copy of which I have. –

4th Cer: Triglochidiatus. – is doubtless the plant labelled "Rio Gallo Nov. 16th" as that plant was seen there. – I find since I came home some spines of this plant without label! or date! collected somewhere in this region – The spines are channelled as in gonacanthus but only 3 – 4 in the areolae – The Rio Gallo is east of Yuma some 70 miles. –

5th Op: basilaris. – This specimen I had collected in bud & it doubtless fruited in the box. I had collected old fruit & seed, which does not come to light.

6th Op: Echinocarpus. – Was it the seed of this plant which had the accumbent cotyledons? I thought it was the Op. Whipplei. –

7th That Skeleton if I recollect rightly was collected at the place where Op: Chlorotica was first detected, but it is impossible for me to say whether it is of that plant or not. – My impression at the time I remember was that it belonged to some other opuntia – but I think now it must belong to O. Chlorotica; as there was no other kind in that immediate vicinity. – It was taken from a dead fallen specimen. –

8th Yucca No 1, very narrow leaved is not Y. angustifolia – it was collected about half way between Mount San Francisco & Cactus Pass. no seeds or fruit. – 9th Yucca No 2 With large imperfect fruit is what the Mexicans call "Palma" Feb 11. 1854 is what is meant. – It grows 30 feet high 18 inches in diameter at base & branches very differently from any other Yucca that I have seen. –

Bigelovii I remember distinctly putting O. Arborescens more than other

O. Arborescens – it resembles the seeds of this plant in the box

the old reflexed leaves adhere to the younger branches, but on the old stem they are detached by age & decay and the bark has something of the appearance of a young white Oak. Among my plants with Dr. Torrey in N. Y. there are leaves of this tree. I wish Dr. Torrey had specimens of the fruit. – It grows from Bill Williams Fork to near the Cajon of the Sierra Nevada. – It may be new but our Mexicans appeared to think it was a very common plant

10th – Cer. gigantea – young anolue of the same genus grows as you surmise. –

11th What to do with the contents of the box. Take specimens of such things as are interesting to you that can be divided one division with such things as you care nothing about send to me by express – which I suppose is the safest and speediest way. – Such things as can not be divided and is necessary for you to make out the "Synopsis" you will keep. – I should like to see the specimen of Ech. Em. which by association might possibly bring some things in relation to it to my recollection – you can at any rate send me a few bunches of spines. – Also some of the spines of Western variety of Ech. Wisl. –

Mr. Ewing of St. Louis is expected here in a few days and when he returns I will send you a package of some things that I have promised. – Among them cones seeds leaves and staminate flowers of the Sequoia gigantea Sendley's Wellingtonia. L. & H. –

I believe not one of my Cactaceae have yet germinated, and some of my living ones are dead. –

My poor little Greggii I fear is defunct. – I will write again in a few days more fully with regard to my plants & seeds. – As soon as you finish the sections of Mammillareae & Echinocactae of your "Synopsis" I wish you would send me a copy of your notes I think St. Whipple is anxious to get the manuscript as as soon as he can do to be ready for early fall work I have not heard from him directly since I came home. Write soon

Most Respectfully Yours. Jnt Bigelow

Dr. Geo Engelmann

"with you" — you mean

"Q" you say

Q. Cuneata has fissures

Rec'd July 19
Ans July 23 & Aug 6

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

Lancaster July 16. 1855

Dear Doctor. –

I had commenced a letter to you – when I received your note & receipt but concluded it best to wait until I received the box of Cactaceae so as to give all (if I know any thing) in relation to them especially the Ech: Emoryi. –
To tell the truth about it I must have confounded it with Ech: Engelmannii although now when I come to compare them side by side they are very plainly and easily distinguished. –
At the risk of being tedious I will give you a history of my whole collections of Echinocacti. 1st Ech: Whipplei. –
This was first met along the valley of the Uhiquito Colorado about 90 miles west of Zuni – did not see it again often leaving the valley. – It was the first Ech: met on the whole route. –

2nd The second Echinocactus I saw was at or near Cactus Pass about 200 miles further west when I met what I supposed was undoubtedly Ech: Wislizenii which you think is distinct enough to entitle it to another name. — (By the way Dr. Parry was as guilty of dullness in not recognizing those "Hooks" as Lecontii & myself. He saw them both.) This plant plant I met frequently until sometime after we crossed the Colorado Grande and until I met Ech: Engelmannii =

3rd — Ech: Engelmannii. — Immediately after crossing the Colorado this plant was found showing itself in various stages of developpement as regards size & variety of spines as long as we continued in the valley of the Mojave a distance of at least 200 miles

4th Ech: polyancistrus is the next one I remember it was quite limited in locality finding it just on leaving the Mojave valley near the Cajon Pass.

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5th Ech: Emoryi? must have been
collected in the valley of the Mojave.
I think I could have only seen a few spec=
=imens - probably only what I collected - or
I should easily have recognized the diff=
=erence between it and Ech. Engelmannii
I cannot recollect whether it was
aggregated like E. Engelmannii or not
nor do I remember any thing with regard
to flower or fruit. - Can it be Dr. Parry's
Ech: Leylii dracena? or Nuttall's Ech: viridi=
=iflorus? I ask these questions because
I have not a particle of data upon which
to found an opinion excepting your note
on Dr. Parry's Ber: Gigant in Silliman's Jour.
The note on Ech: Cylindracea you remember
is very brief. -

I received a letter from Lieut Whipple
some days ago saying that the Congressional
printer would soon be ready for his report
when it will be necessary for me to send
in the manuscript of our Cactaceae.
I wish my dear friend you would send

see our notes as soon as possible
as I dislike very much to disappoint
Mr. Whipple and those under government
engaged in getting out the Rail Road Report
please send it immediately if possible
I have had no answer to my last
epistle. — Dr. Parry had written me
within a few days I will answer
him soon. — None of my seeds of
Cactaceae have germinated. —
All the living plants I brought with
me from St Louis are growing finely
with the exception of two or three.
My Op: basilaris from the herbarium
is growing & I have also a specimen
of Op: brachyanthra growing nicely —
With sentiments of the highest
Respect I am yours. &c.
Jno. Bigelow

P.S.
Please answer this as soon as you can
Mr. Ewing will return to St Louis in
5 or 6 weeks when I will have an
opportunity of sending you some things

Rec'd Aug 15
Ans Aug 18

Lancaster August 10. 1855

My Dear Doctor:

I received a letter last evening from Lieut Whipple dated August 6th stating that the public printer will call upon him soon for the manuscript of his report and saying that we ought to be ready for him in September. The time is so fast approaching when I expect to be called on for my contribution that I begin to feel anxious about it more especially as I have not yet a single note of our labours at St. Louis. Please send them to me as soon as you possibly can.

---

Your most welcome letter of July 23rd was some time ago received. You observe in it that some of our rare cactaceae are germinating that have been

planted a year or more. – Several of my Opuntiae I find are germinating E.g. O. angustata. – My O. basilaris planted from the herbarium is growing finely "O. purpurascens from the Simpson by Wright" a plant which you gave me I thought had died altogether I find has been sending up sprouts from the ground. – I find my Op. brachiarthra is sending out 4 or 5 branches so that I can soon supply you with plenty of that species and if your O. basilaris fails I can soon supply you with it I am sorry to find one of my most coveted Cereii O. coccineus from El Paso is irretrievably dead – The rest are all living. – It is singular that of all my Opuntiae O. Vulgaris from Virginia is the only one that has rotted and died entirely for me. – All the Mammillarias excepting the little Mexican Villifera have died.

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I will adopt your suggestion and sow over another year the seeds of such cacti as do not germinate the first season. With care I hope we may get get some more rare ones to grow for us. There is a fine non-descript growing in the Washington garden which you must get on the first opportunity. You ask if you gave me a copy of Salmi Dyckensis? you did not — and I shall be most happy to receive one if you have a copy to spare.

With much pleasure & cheerfulness will I write to our friend Schott but how will I direct so that he may get it soon?

Most Respectfully your friend
William M. Hegelow

P.S. Hopefully & anxiously have I been looking for that "better news" that you promised soon

I think if Dr. Shumard collects Cactaceae at all he will hardly fail to find the Op: <u>undissitata</u> on the Glauvon. It is very distinct from the arborescens the only species with which there is any danger of confounding it – It is an ugly customer however to handle. – But if he could only get good seed of it. With the exception of O. prolifera & Bigelovii I find all the cylindrica cacti are hard to transplant. Their seeds however germinate without much difficulty. – My little branches of Op. fruticosa would not grow for me –

I would like to get an answer from you before I write Lieut Whipple

adieu Yours B

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GEORGE ENGELMANN PAPERS

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Rec'd Aug 17th
Ans Aug 18

Lancaster August 13th 1855.

My Dear Doctor:

Your Manuscript notes of Mammillaria and Echinocactus with a conspectus of American Species as far as we know was welcomed most agreeably only the day after I sent you a short note of importunity. I will attend to having extra copies of our report sufficient for both of us. I will write to Lieut Whipple to day and will mention your suggestion to get Roetter to make some figures especially of some of the more novel species. – I will take the responsibility of having some done but I have not the least doubt but Lieut W. will be well pleased if we only have them done in time for present use. –

I find in your notes on Ech. Engelmanni you refer to "E. Parryi E. syn. Cact. of the neighborhood of El Paso" I presume you mean our old E. albispinus yet in the Conspectus you retain the old name – do you remember? I see also in reference to the similarity of E. Whipplii to other Echinocacti you say it closely resembles E. brevispinus from Eagle Pass by which you mean E. brevihamatus no doubt. –

Enclosed I send some seed with a copy of original label. This seed is from a fruit resembling Ech Wislizeni which I received from Lieut Whipple collector when on the Boundary Survey. At the same time I received from him a package of Sapindus fruits done up in the same kind of paper labelled "Fruit of a Penal Plant Shrub No 29" hand writing unknown to me "grows 15 ft high" in the hand writing of Lieut Whipple. – Another package was received in the same kind of paper labelled "Yucca seeds" in the same unknown hand with "from 300 miles west of El Paso 5600 ft above tide of sea" in Lt. Whipples hand. – I showed you this Echinocactus seed while I was in St. Louis but am uncertain whether you kept any specimens of it as very little was thought or known

of E. ch. LeConteii at that time and the obscurity of the label with regard to locality you thought rendered it nearly useless to you. Since my specimen of E. LeConteii have been received and new interest excited with regard to any thing that will throw even a ray of light upon this subject I have thought it might not prove unentertaining to call your attention to it again. From the appearance of labels & paper all of them were evidently collected in or near one locality and as the Penal Gloria is in the neighborhood of the Cereus giganteus which with the structure of the label would lead to a pretty fair conclusion that the Echinocactus Ind was collected in that region. — At least I have no doubt of it myself.

When I came to compare them with that you sent me labelled "E. Bigelovii" E. LeConteii I found them so very different!! different in size! shape! hilum! & surface E. Wislizenii rugose! E. LeConteii finely pitted...!! However I have no authentic E. Wislizenii Ind to compare with this yet from the discription I judge they are identical if this is the true E. ch. Wislizenii Ind there can be little doubt in my mind that it grows further west than we at first conjectured after finding E. LeConteii I should like to have a seed or two with a bunch of spines from the El Paso E. ch. Wislizenii if you have them to spare. — In my letter of Aug 10. I wrote that I had lately received a letter from Lieut Whipple Please write soon again.

I am with sentiments of respect your devoted friend

J. M. Bigelow

Dr. Geo. Engelmann.

P.S. There is in the Washington garden a large Echinocactus which I obtained at San Francisco said to be from the neighborhood of Guaymas. — About as large & otherwise some what resembe E. ch. Wislizenii. — Prof Schott will probably get it

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GEORGE ENGELMANN PAPERS

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Rec'd Aug 30th
Ans Sept 5th

Lancaster Aug 26th 1855

Dear Doctor:

Your kind letter of Aug. 17th was received two or 3 days ago & the next day Prince Salm's work on Cach. for which you will please accept my most grateful thanks. Since I received yours I have had another from Lt. Whipple in which he says his money for such purposes is low yet we must make an estimate of what it will probably cost to have such details made as seems necessary & proper — Please let me know immediately and I will communicate with him or if you think best you can communicate with him directly. — They are 4to size. — It will be well to go ahead with the illustrations as rapidly as possible. — He informs me that you have been supplied with a set of the Maps of the various Rail Road Surveys He is in favor of making a Botanical map of the size of the reduced general map of the Rail Roads accompanying the Report of the Sec. of War. a copy of which Lt Whipple tells me you have received. — The best plan I think will be for us to exchange our

Maps after we have located our plants (Cactae & Pines) on them. — I will mark on mine where I have seen such as I know. — I should like to get your synopsis of Mesci & Opuntiae first however on account of the occasional change of names. If you can do yours without mine as you have to depend on correspondents and collectors. — There may however be localities on mine useful to you and I should like to copy all of yours on mine. —

My dead El Paso berries is the scarlet or crimson day and night flowering one which I believe you call Ber. Polyacanthus. — Both the label being lost from old associations I call this Ber. Coccineus, because which at El Paso Mr Light & myself compared the plant in bloom with your description of Ber. Coccineus in Pl. Lindh. & supposed it much the same. — My O. bracheiathus grows vigorously. The first branch that sprouted is nearly two 4 inches long and on it 3 new joints are started now 1½ inches in length. When will be the best time to take them off for separate plants? You ask if it may

not being to the Class of C. fragilis!
By no means! C. bachanthra has smooth pins
although what I saw was not perfect. Further
it has nothing of the appearance of C. fragilis
in habit. The Yucca seeds collected by
Dr Whipple are not from our Palm of
the Colorado & Mojave. I send some, they
may germinate for you.
Well about our western Echinocacti again
I have written Dr. Whipple to know if he
has any recollection of the locality of the
collection of his seeds. — The fruit & seeds
you found in the box is from Ech: Le Conteii!
I remember gathering them well. — I
first found the plant without fruit taking
it from its size & habit for Ech: Wislizenii
I looked long & diligently for fruit & seeds
and when I found them I was confirmed
in my impression that the plant was Ech:
Wisl. — Had I thought it a different
species I should have looked for more
fruit though I collected all I could find.
I am almost certain also that the specimen
of Ech: Bigelovii which I brought was the only
one I found — otherwise I should easily have

recognize the difference between
it and Ech: Engelmanni as I have it
before me to compare. Ech Wisl
I had not by me to compare with Col
Leconte. Mr. Ewing goes to St Louis
in a few days & I will send by him.
Some things I had promised. Have
better send a point of C. brachiantha?

Respectfully yours
J. M. Bigelow

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

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Rec'd Sept 28
ans same day

St Louis Sept 21. 1858

My Dear Doctor!

"Yours of the 15th also one from Saph. Whipple dated Sept 17th was received yesterday" I copy from his letter all he has written in relation to our drawings & engravings.

"The Public Printer requires that all "of the original drawings shall be sent to him before "engraved. — Therefore I suggest the following plan. "When you and Dr. Engelmann have had your drawings "prepared send them on and specify the style in which "they ought to be engraved or lithographed. — Mention "the artist whom you think competent to execute them "properly, and at the same time let that artist make "a proposal to the Supt of public printing for a contract "to engrave and print them under your or Dr. Engelmann's "superintendence — This proposal should state specifically "the manner in which the work is to be done, and the "kind of paper to be used. — In the "Intelligencer" or "Union" about a month since there was an advertisement "for proposals. — That will show the form required.

"Then if the Supt accepts the proposal, the drawings "will be sent back; otherwise, whoever performs the "work, the proofs will be submitted to your criticism, "and you must reject every one that is not satisfactory "The Supt pretends to allow us full authority with the "veto power — nothing more. — But I wish you or "Dr. Engelmann to be very particular in stating the "manner and style in which the engraving should be "done.

"The size of the quarto page is (14½ in long, 11½ in wide) — A proof of Roy Baird's illustrations (border not included) (9¼ in long, 6⅞ wide)

"The printed matter covers (11 inches long, 7½ in wide)

A proof of the landscapes is (border not included) (9 inches long, 6 in wide)

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" Please present my respects to Dr. Engelmann. — I would
" write to him but I think it better for you to conclude
" the arrangements commenced. Not knowing exactly how
" matters stand it would not be prudent to thrust my
" hands among the Cactacae. Wish you had complimented
" the Sec. of War with some new thing. — Why not change the
" "C. Whipplei" to C. Davisii. — It would be worthy of him & should
" be pleased with the change."

The following is a list of Mr. Möhlhausens drawings, most of them made en route of survey. — I have them now with me. —

1st Mam. mallacia Wrightii plant with fruit natural size from the neighborhood of the Peas. near Anton Chico N.M.

2nd expanded flowers with a tubercle branch of spines from a plant that flowered in the Congressional garden.

3rd Mam. Rubrisea plant natural size.

4th Flower of same showing abnormal scales on the ovary bloomed in the Congressional garden.

5th Cch: Engelmannii 1st a plant & fruit reduced ¼ size 2nd sketch of a cluster of stems still more reduced. 3rd cross section of a stem reduced ¼ size.

(9th A branch of spines & fruit of C. Engelmann natural size with natural & enlarged seeds &c. Made by Mr. Gressner here)

10th Cch: Whipplei a plant of natural size detached branch of spines &c.

(11th flowers of Cereus that bloomed in Washington 1st Cer: Fendleri &c. 2nd Cer: vendiflorus with details of anthers and stigmata

12th Cereus from Bill Williams Fork &c. flower of Mammillaria &c.

13th Cer: Cornideus ~~plant~~ Stem natural size & sketch of whole plant reduced

14th Cer: phoeniceus detached stem natural size & sketch of aggregate cluster reduced.

15th Cer: triglochidiatus detached stem natural size

Taken off H. Mehrbach in Washington

Sketch of a cluster more reduced
16th Ler. gigantea much reduced – a young plant hu-
portionately reduced
17th Skeleton of woody cones reduced Sketch H.
18th Cp. indusiata branch & elevation and natural size
Sketch of the whole plant much reduced.
19th Cp. mauthaniana branch & fruit natural size
Sketch of whole plant much reduced – see H.
20th Cp. Uberesum branch & fruit natural size
Sketch of whole plant much reduced See H
21st Cp. Whipsiae branch & fruit natural size
Sketch of whole plant much reduced – see H
22nd Cp. Kamerseana branch & fruit natural size
Sketch of whole plant much reduced
23rd Cp. fimbriata branches & fruit, natural size see H
23rd B. Cp. marginata! branches & fruits natural size See H
24th Cp. Clavata fruit natural size see H
25th Cp. brachiatum plant & fruit natural size
26th Cp. Leichtlinii point & fruit natural size Sketch of whole
plant reduced see H
27th Cp. Hindsiana var. Ophiorrhiza plant & fruit natural size
28th Cp. Lobatum point & fruit reduced & Sketch of whole
plant more reduced.
29th Cp. ingelmannii var. Cyrtodes point & fruit reduced ½
Sketch of whole plant more reduced See H
31st Cp. Commutatum point & fruit reduced about ½
Sketch of whole plant more reduced See H
30th flower of Cp. ingelmannii from a plant blooming
in the Conservatory garden kindly by Mr. Young
5th Bundle of Spines of Ech. polycanthus taken here by presented
6th A. fruit see H of Ech. Mexicanus from the Galeby H. Chapple
to Kew here by the presented
6th B. Tubercle bundle of Spines see H of Ech. Lemaire
taken here by the presented
7th 2 bundles of Spines of E. Beguinii by the presented

Besides the drawings of cactaceae made by Mr. Möllhausen already enumerated I have the following of other plants.

1st Cone and leaf &c. of Pinus brachyptera (?) taken in Washington from specimen collected in California

2nd Cone leaf &c. of another Californian species probably only a variety of preceding.

3rd Sketch of Sequoia gigantea (Wellingtonia Lind) copied from Gaskinen engraving. (probably not worth getting engraved)

4th Branch cone & seed of some natural size

5th Branch & cones of Sequoia sempervirens (Lambertiana Lind) natural size

6th Leaf & flower of Clitoria? sp. in the form in a plant near Fort Smith Ark. (probably not worth engraving)

As it will be so shortly before you send a specimen of your engravings from St Louis I shall probably defer my visit to Capt. Whipple until I get them.

From the tenor of Capt Whipple's letter I fear we will be subject to some delay in submitting drawings to the Dept. of Public Printing even should we be permitted to get it done in St Louis. I will write to Capt Whipple immediately after getting your sample and proposition

I am extremely busy &c

M. Neal Lake yours &c

John M. Bigelow

Geo Engelmann Esq. St Louis.

P.S. Can you not satisfy Capt Whipple by having some of your new Opuntiae opted the Hon. Secretary of War Jefferson Davis?

[illegible] — [illegible] would be [illegible]

Rec'd Sept 28
Ans Oct 6 9 x 11

Lancaster Sept. 24 1855

My Dear & Respected Friend

I hav scarcely made my last letter to you containing Capt Whipple's plan & instructions with regard to our drawings and engravings of Cactaceae before I received yours of the 18th Inst. covering the plans & specimen of your engraver &c.

I lost no time in transmitting them with your letter to Capt Whipple. He will probably answer you directly. — It seems that he has little control over the management of the work excepting to reject if it be not properly done. — Of the drawings we have already made (a list of which I sent you in my last) I would be glad if your engraver could make a bid or proposal for the engraving so as to have them executed under your eye. —

Taking yours and what we have already would make a very heavy job especially in the printing. If he could get mine with yours the engraving alone would amount to upwards of $1000. I have written to Capt. Whipple to know if we could not get them done together by one artist. Write soon and let me know your views upon it. — There will be very little repetition of figures in your plates, I think, excepting maybe in Opuntia for I do not know how far you intend to illustrate them. I am looking anxiously for the Mss. of Cerei

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

Have you heard lately from our old friend Dr. Parry? It is some time since I have! Un- or rather Mis-fortunately I neglected him after

getting home and he expressed fears that I had become stuck upon some ignoble Cacti! I have written him lately and hope to get a response soon. —
I hope you will not become overwhelmed with professional business before our Cacti become disentangled. —
Respects to your kind family.
With sentiments of the highest esteem
I am truly Yours

Wm M. Pepton

Dr. Engelmann
St Louis —

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Rec'd Octo 8
Ans Octo 9 & 11

Lancaster ~~Septr~~ October 3. 1855

My Dear Doctor:

Yours of the 22nd and 26th Septr containing notes & diagnoses of Cereii came to hand several days ago. — I have been waiting a day or two re-examining my specimens and notes of my collections I will give my views & impressions of them in the order you have named. —

1. Cereus viridiflorus — no ambiguity about it!
2. C. caespitosus — ditto ditto.

The name of this beautiful species is not very appropriate because among all of the subgenus Echinocereus the character ~~istics~~ from which this one derives its name, is much less marked or peculiar than many other very distinct species. Indeed of all I know, none I believe are less simple in their growth than this.

3. C. Fendleri very good! — This plant I know well having seen and studied since I knew any thing of Cacti. Although somewhat diversified in its appearance it is well characterized — sometimes simple but frequently irregularly aggregated yet never assuming the regular oval masses of C. phoeniceus and conoideus. — The bulbous roots of the spines is not a good distinctive character because all Echinocereii have them.

4. C. Bigelovii var. Mohavensis I think is distinct. It certainly does not belong to C. Fendleri! The spines in C. Fendleri are always more numerous, unequal, radial spines mostly short and seldom curved — central spine angled or channelled. — plant totally different in growth — always of a dark greenish color which is much more conspicuous in the fresh state than in the herbarium. C. Mohavensis has seldom more than 7 spines (at least in my specimens) always round (or nearly so) radial spines as long or longer than the central. Plant light green

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and grows in large oval masses like C. phoeniceus
I have but a single small fragment of a specimen
of C. Zuniensis but from my notes and recollection
with the small specimen before me I arrive at the con=
=clusion that it is doubtless a form of C. Covideus
And I am more confident from the fact that you have
received specimens that I collected as far west as the
San Francisco Mts. to this species. – It is certainly not
C. Fendleri although its angled bulbous rooted & mon
numerous spines would approach it more nearly than
C. Mohavensis.

7. C. paucispinus Var. Texensis Latitude 29° 30' Longitude 101°
var. ~~Zun~~ Neo-Mexicana Lat. 35° Long. 109° a dislocation
of nearly 6 degrees of Latitude and 8 degrees of Longitude
much greater than that of any other American Cereus
that we know. Besides they do not look at all alike
when growing. – The Texan species grows on rocks – the
Zunian one in sand. – I think they can hardly be the
same. – If it is the same it unites it with C. triglochidiatus
5. C. gonacanthus – This I think is distinct. – It however
approaches C. trigl. and should the flower and fruit on
examination prove the same they doubtless ought to
come together.

6. C. triglochidiatus well characterized & marked.

8. C. phoeniceus – also good.

It is impossible to determine the relation between
C. phoen. and C. Covideus any better than making them
subspecies until we get the flower & fruit. But I will
venture my hat on the prediction that when we do
get them in full we will find them good species. –
It is best probably to keep them as they are until we
get more material. –

9. C. poecilocentrus – Good if it should not prove too
near C. Engelmanni a condition for which I must own
I have some fears. – Have you specimens enough of

C. Engelmanni to determine the color of the spines?
Our two varieties look very much alike except in the color of the spines but there may be differences in the flower spikes and then again it may be the one or the other variety will prove to be C. Engelmanni. As C. chrysocarpus is the most western of the two it will be more likely to merge into C. Engelmanni. It is impossible however to determine these things with our present scanty material. –

10. C. gigantus Torr. –
I received your letter of Sept 26th but will postpone its answer until tomorrow.

Respectfully yours.

J. M. Bigelow

Geo. Engelmann

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

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Rec – Octo 8
Ans octo 9 & 11

Lancaster Oct 6. 1855

My dear Doctor

In consultation with my brother yesterday I sit down to answer yours of the 26th Sept.

With regard to adopting Specional names for some of our Cacti – if the gentlemen you have named are entitled to such an honor, then the Echinocactus (your) whose seeds have been distributed in Europe by his name, thereby therefore it, and if nothing of the kind intended to prevent – I could not consent to change it. – Opuntia indusiata although a very Sept & pretty name, is not distinctive enough to be very appropriate, for several reasons, – 1st there is not an exception to the section of Cylindric Opuntias contra ~~distinguished~~ distinguished from Clavatae, so far as I know, but that have a sheathed covering to the spines, and some of the Clavatae also have that covering. – 2nd It is a hard plant – the most ferocious spined one of the whole class, with perhaps the exception of O. Rylei and Dr Parry's closely allied O. prolifera; So with your permission, we will name it O. Davisii. – I have a good figure of it. Made on the ground by Mühlhausen

I prefer to keep our old name of Chlorotion for No. 28. Saint Tidball has no special claim to the name – It was an oversight in publishing it in my notes under that name. When I first discovered it, we were on a side exploration to Bill Williams Mt., with a small detachment escorted by Lt. Tidball – Mr Mühlhausen with the main body were behind. – Not knowing whether I might meet it again on our main route, I had a hasty sketch made of it at once by Saint Tidball, who by the way was a very clever artist, and from this circumstance, as I had no name for it, and it being a very peculiar one, I referred to it in this way to distinguish from other. – Mr Mühlhausen afterwards made a handsome drawing of it. – I would not change it for another personal name for any thing in the world. – And if you think best,

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I will not for the very appropriate one of chlorotica. — I have no objections to giving the name of the Hon. Sec'y. to E. poecilocentra, yet I think that our New Mexican E. paucispinus, will be fully as likely to prove as distinct from the Texan plant of the same name, as E. poecilocentra is from E. Engelmanni already published. — So, I will leave with you entirely — if our present E. paucispinus be not distinct as character=istic enough, we will consider his name fixed on E. poecil=ocentra.

You probably misapprehended the remark of Mr. Whipple, (he is a Captain now,) with regard to his having limited means. He has nothing to do with the engraving and printing of his orion Report, — it is only with the preparation of the Report and drawings, that he has to do. — Congress, by resolution, has ordered the printing of 20.000 copies of all the Pacific Railroad Reports combined; and of course it furnishes the means. — That is the reason he has to submit his drawings, &c. to the Supt. of Public printing. — Capt. Whipple, from appropriations for that purpose, will pay for the drawings, but the Supt. or some other officer of Congress, will authorize and pay for the engravings & printing. Capt. Whipple says he has no discretion, whatever, in the matter of engraving & printing, excepting to reject, if ~~this~~ they are not done in a proper manner. All the drawings we have made that are necessary for the illustration of the Report will be published. — I will wait however a very short time, to hear from Capt Whipple, before I send them to you. — When I sent him your letter and samples, (more than a week ago,) I proposed to him to have the engraving of our (Mollhausen,) drawings done by your artists in St Louis, and under your supervision. Probably he has written directly to you on this. We shall one of us certainly hear from him soon...

Nos 11 and 12 are figures of flowers from living plants that we brought with us, which bloomed in the

Congressional Garden, after I left Washington. No 11 is labelled "Cereus Fendleri" No 12 "B. Willia Fork St. Whipple" taken by Robert Metzeroth. — No details of spines are given with C. Fendleri and but very imperfect ones of No 12. — The flowers look a good deal alike. — Every flower in No 12 is larger sepals & petals much more crenulate, filaments & anthers red, style & stigmata much ~~longer~~ (½ an inch) longer than the stamens. — In "C. Fendleri" the stamens are yellow, and the style & stigmata exactly of the same length. — You can tell better however when you see them. We must by all means get the species of each. — I will write to Smith for them immediately. I think No 12 can hardly be C. Davisii (pocilocentrus) although it may possibly be so. —

You observe with our present means that you can arrange the Cereii quite satisfactorily. — As you have already sent me a conspectus of the American Mam. & Echinocactae I hope you will also those of Cereii and Opuntiae when you have them finished. —

I have no doubt but the specimen of Echinocactus said to have come from Sonora which I brought with me from California now in the Congressional garden is E. Ingens Zucc. I will send for the spines of it also. — Kindest regards to your good family. —

Respectfully and truly yours. J. M. Rigdon

Dr Engelmann
St Louis.

P.S. on plate No 12 is figured a flower of a Mam. which may possibly prove interesting. I will send them about Monday next if I do not in the mean time get word from Capt Whipple

BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

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GEORGE ENGELMANN PAPERS

Rec'd Oct 20th
Ans Oct 23d

#2

Lancaster Oct. 16. 1855

My Dear Doctor.

By tonight's Express I send you the drawings spoken of so often — you will readily know those I had made here from those by Mr. Möllhausen and also those made in Washington. —

Besides them are also enclosed a small plank or joint of Ops: brachyanthera a piece of wood of Sequoia sempervirens (California Redwood) cones seeds branches & staminate flowers of Sequoia gigantea (California Giant or Mammoth tree).

The cone of Ops: arborescens I promised to send in place of the one you sent to Prince Salm I will have to send by some person. — I was disappointed in sending by Mr. Ewing as I had anticipated.

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I enclose money to pay the express for which I wish you to take a receipt from them & send me. —

Your welcome letter of Oct. 10 I received today as also that of Oct 8th I will answer them tomorrow. —

I sent more than a week ago for the species from the plants of which the drawing of flowers were made in Washington but have not received them yet. I should have had them several days ago. — I will send them as soon as I get them. — Write soon. —

truly your friend
J. M. Bigelow

I will write more fully tomorrow

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Rec'd Oct 22 3/5
Ans Oct 23

Lancaster Octo 17. 1855

My Dear Doctor:

I sit down today to answer your always welcome letters of the 9th & 10th Octo. A note with Möllhausen's drawings I sent yesterday — the note enclosure by mail — the drawings and a few botanical specimens by Express. —

Capt. Whipple writes me that they are rapidly printing off the letter press of his Report at this time and he is very busily engaged in correcting the proofs now. And that the printer will very soon call for the Manuscripts of the scientific portion of the Report. They must be ready for them soon. —

Of the drawings I sent you yesterday those made on the field by Möllhausen are marked with his name. — Nos. 11 and 12 were made in Washington from plants which flowered since I left. The balance I had made here before I knew you were getting them done by Mr. Rollter. — Mine are not nearly equal to yours and need not be used I only send them to you because they cost nothing in the transmission. You will send the drawings ~~to~~ as soon as possible to Capt Whipple at Washington after you examine them. He informs me they are nearly ready to begin the work of engraving As I told you yesterday I sent to Washington some 10 days ago for the spines of those plants from which drawings Nos 11 & 12 were made but have yet received no return either by spines or answer. — I will send again tomorrow if I get nothing in the mean time

Now about the oval masses of Cereus! C. viridiflorus, chloranthus, dasyacanthus, stenoides, cespitosus, longisetus, fendleri, gonacanthus, triglochidiatus, oleracanthus, variegatus and chrysocentrus

are irregularly cæspitose – that is the joints or stems being irregularly longer or shorter than others and are never found in large hemispherical or oval masses. — I have seen them all often and in various localities excepting Clonoides, gonacanthus, longisetus, and olegacanthus each of which once seen only in one locality. — Emmacanthus if I recognize the plants varies a good deal; – about Eagle Pass it grows in irregular masses sometimes large and sometimes small. – About El Paso if I remember rightly it is more regular in outline and never found in such large masses. – Stramineus as well as I remember is always hemispherical regular in outline never growing in very large masses – or if they do – they become elevated in proportion to the breadth so as to form the hemispherical shape. — Polyacanthus (El Paso) sometimes grows in regular masses when small but irregular in circumference when in large masses the joints or stems being generally nearly equal so as to form a somewhat flattened top. * In Conoidens the joints are more irregular in height but the general outline is somewhat hemispherical. *

Beglovii is regular in height of joints & outline when in small masses hemispherical and when in large masses as is frequently the case oval – the term may not be correct but this is what I mean. – I have seen the Var. Bumeisteri frequently 3 or 4 feet across the mass the joints studded as thickly as they can stand having some 250 – 500 heads or joints. – Var. Mohavensis does not grow so large so far as I saw which was only in one locality – the other I saw frequently from the Rio Chiquito Colorado to Cactus Pass or the head of Bill Williams Fork. – Pectinatus, adustus, rufispinus, and Roemeri and Engelmanni I do not remember to have seen

* See 4 of the Page

Colour — C. Beplovii is light green "lacte viridis"! C. triglochidiatus is deep green "pur viridis"! and C. Fendleri is dark green "atroviridis"! The colour of Beplovii resembles more that of Conoideus than that of Fendleri. — Triglochidiatus and Fendleri are the darkest cerei I know — the next is C. pauciflorus near Devils River Texas. —

Thank you for the diagrams of E. ingens. I sent to Washington for spines from my Sonora plant brought from San Francisco. I hope to get them with my other spines. — I like your division of Opuntiae better than Prince Salm. — I do not remember however what one or ones belong to the 2nd Subdivision of Ellipt: — Stenopetalae may be I have none belonging to this Subdivision. — You will see by Mot. Bandy drawing that O. brachyanthra has no affinity with O. fragilis. — It is entirely different. — It may belong to the class Ellipticae but the joints are never elliptic. The colour of the fruit was deep red on examination when we first collected it. —

In your arrangement of Cerei you have left out C. Emoryi probably an oversight. — I do not know in which of your subdivisions of Cerei it should be placed. — What appears most peculiar about it is the permanence of the Spinulae on the fruit. On all that I know they are very caduceous especially on the maturity of the fruit. C. Berlandierii I suppose grows on the lower Nueces. I have been a considerable distance on the upper waters of the Nueces but do not remember having seen it. Is C. tuberosus classed among the Echinocerei? I had thought otherwise. — In Prince Salm Hort Cach. there is a section of gracilions among the true Cerei to which this in some respects I should think would approach. I am however acquainted with no one of

this subdivision. — I believe I am done — do not get out of patience with my prolixity

With sentiments of the highest regard
I am yours truly
John M. Bigelow

P. S. Do you hear from our mutual friend Dr. Parry? I must give him a thrust that will be hard to parry with one of my cactus spines soon if I do not hear from him.

* C. phoeniceus grows nearly in the same way as polyacanthus but the joints are not so high consequently when in large masses it is more flattened on the Top.

P. S. S. For fear of making mistakes I inclose the sheets containing your diagnosis & remarks on C. bigelovii & fendleri —

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Rec^d Nov 2^d
Ans Nov 6

Lancaster Octr. 1855

My Dear Doctor. –

I enclose what I have left of the manuscript of Cereei, having sent you some days ago the 2 first pages. – I copy from my letters your suggestions with regard to the proposed alterations. –

Septr 26. 1855. you write: "I want to add to Cereei that C. conoideus as well as C. Bigelovii are to be con=sidered on the same footing – they are both probably subspecies or may be species proper; it may be well even, to add to C. Bigelovii that the spines do seem to indicate a near relation to C. Fendleri, but that we are not sure, that flower & fruit may not bring them nearer to the crimson flowered series, add also; C. paucispinus itself may be nothing but a subspecies of C. polyacanthus"

Again Octo 9th "C. oligocanthus E. & B. sp. each. summo saepe robustione „acute angulato" add also the "Sandy soil" to the Cedars. –

C. Fendleri add parce ramosum "pauciridis" (dark green)

C. Bigelovii ----- dense caespitosus "glaucous"

Continue β! Zuniensis with Bigelovii"

Octo. 10th you write: "You may mention in regard to β.! Zuniensis that its habit ~~seems~~ bears some resemblance to C. conoideus to which it may possibly belong ------- but the arrangement of the spines, the lower being weaker, the upper the stoutest which is contrary to C. conoideus, and a single central spine convinces me that you are mistaken. – Zuniensis resembles in that respect to C. gono-canthus and some form of C. Fendleri"

To answer yours of the 22nd as satisfactorily as I can I will adopt the order you make your in=quiries to avoid confusion as much as possible

The dark colour of Möllhausen drawings was a fault I found long ago and many times nearly quarrelled with him about but his excuse was that with his means in the field he could hardly do otherwise and that the difficulty about wrong impressions should be explained in the text. –

Now to particulars. –

Nos. 1 – 2 With regard to the number of radial spines of M. Wightii you may be right. It is my impression however that they vary very much. – I can not decide between you because I have no specimen with me and not even your description of the species –

3 – 4 Mam. virid. Would it not be well to give a figure of the plant also? 5 – 7 I pass also.

8 – 9 would you substitute better ones? 10 – 11 I pass

12 C. Fundlei! Is it the same as fig 1 No. 11? I am pretty certain it is not C. Varicgatus but not so with Zunieusis. – 13 – 16 I pass

17. Skeleton & Section of Cer. gigant. On reference to your diagnosis of this plant in both Parry's & Thurber's Collections I find there will be required some alteration. – The number of ~~the~~ ribs at the base may be about – 12 oftentimes more, but they increase in number upwards only until they arrive at the largest circumference of the plant which is generally about 15 feet from the ground – from thence they decrease to the apex. I cut the specimen myself and counted the ribs from which the section was made – I know it is correct for I stood by M. while it was being made!!

The number at this point I think varies according to the size & age of the tree. – The sketch of the skeleton I had also a good deal of trouble in getting – making M. travel back several miles, in consequence of which a good deal of growling was expended

– good specimens of the Skeleton seldom occur on account of its fragility – I have no objection to your using this for Emory's Report myself but if you can give us an equivalent of equal interest in return which I suppose you can easily do without detracting from the merits of that work – we might thereby better please Capt Whipple. – 18–20 I pass.

21. In the fresh fruit of O. Whipp from which the drawing was made I think the tuberculations were more rounded & distinct than in our dried specimens – Ours are also somewhat flattened out of shape by the pressure of the herbarium.

23–24 I pass. 25 If the drawing represents Op. brachyarthra as ascending it is incorrect. All the specimens of the plant I saw were prostrate

22 Op. Sam. The representation of the fruit is very good. – The areolae of the fruit is as thickly beset as they can be with very fine bristles 2–3 or many be 4 lines long. In the specimens we had here the bristles were broken and rubbed off so as to give no idea how it stands in nature. In this instance the figure is not probably exactly correct, but if I recollect rightly it is as nearly as that of the fruit of O. Clavata. I forget the colour of the bristles of the fruit of O. Sam

26. The joints of O. basilaris were only occasionally emarginate as in the specimen from which Mr. made his figure. – 27 pass.

28. I found no seed of O. Chlorotica but often found abortive fruits & I think I brought some home

29 pass 30 M. did not make this flower and I am not certain the plant on which it grew was from the Rio Grande

31. Op Comanch the sketch of this plant is tolerably good – the manner of branching is very various

I have completed my account of Mecum & Ech. I had very little to add to your account at any rate — Did I do right in giving a short place to Ech. ingens and assuming my Sonoraplant as one? without further data

I have sent to Washington the second time for the Spines of it as well as of the others we wanted.

In the MS. of your addition to the diagnosis of M. Wrightii you say ..... "bacca succosa majuscula purpurascente floris rudimentis coronata" I will interline what you have added from Mr's drawing so that it will read thus M. Wrightii ..... "bacca ovato-subgloboso succosa majuscula purpurascente floris rudimento coronata"

I will fight you on the O. brachyarthra question until our plants grow to flower & fruit. You will then find I am nearest right!!

The old joints of O. fragilis are elliptical and sometimes almost orbicular — the old joints of O. brach are never so. — It is only the young joints of O fragilis that are subterete somewhat like O. brachyarthra

In great haste yours

Most Respectfully

John M Bigelow

Moellhausen Cont.

fig 1 & 2 can be used

3 is a little better 4 is a poor drawing

8 & 9 I would not use — or the sketch only ?

10 may be copied 11 in Boundary Report already

12 probably Sonderi ? mere mere as the in Bound Rep

13 pretty good — but I have it

14 " " "

15 C highish — sketch may be used

16. C. g. g. 17 & 18 good, can be used — perhaps but in Boundary Report

18 good, can be used 19 — 20. 21. 22 & the 23 also

24 useless 25 than it better — 26 can be used

27 from better 28 will use it 29 copy small sketch

30 is the sketch good ? may be used

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Rec'd Nov 13th
Ans Nov 14

Lancaster Nov. 8th 1855–

My dear Doctor.–

I received a day or two ago from Capt Whipple a note dated Octo 27th inclosing yours to him of Oct. 23rd in relation to Möllhausens drawings.– In his note to me he says "In reply [to Dr. Engelmann] I told him that I presume you [myself] would like to have the errors in the Cactus drawings corrected. As regards the pine cones I presume the corrections with regard to shade might be made by the artist who will copy them on plates for the engraver.– I have learned much regarding the manner of getting up illustrations.– Some of the engravers employ excellent artists, and it is necessary only to give them sufficients to indicate the idea to be represented.– The most characteristic as well as the most beautiful of all my illustrations for the itinerary and the Indian Reports have been made from the rudest outline sketches made in the field.– Therefore I presume a note to the engraver would serve to correct the faults of your pine cones."

Some of the Cacti can no doubt be corrected in the same way while others will probably have to be somewhat altered.–

I will now return to some suggestions of your last letter which I neglected to answer before

With regard to O. Baylei I had intended to get Molle. to make a good figure of it on the road but it was so awful to handle – in fact it was impossible to carry a joint without disfiguring it – and it never happening to occur at a camp when it was convenient to take it – was the reason of its being neglected! – The rough sketch I now send I fear is not sufficient to give a clear idea of anything more than its mode of growth.

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You ask if I have no specimens of Sequoia Sempervirens
- When in California the cones were not in a perfect state & no staminate flowers in existence I neglected taking more than a single specimen which is in the possession of Dr. Torrey in New York (Mohl made his figure from it)
My specimens of S. gigantea I obtained in part (~~[illegible]~~ with (staminate flowers) since I left. - I have no doubt I could get the S. Sempervirens for you in the same way through my friend Dr. Randall of San Francisco "Those specimens from Washington" Capt. Whipple tells me Smith the gardener has promised to send down but they have not yet arrived. I have been waiting a day or so in hopes of getting a reply to my last as well as the specimens from Washington. Hope you will not be much delayed on Opuntiae

With sentiments of the highest respect
Most truly
Yours John M. Bigelow

P.S.
As I was ready to mail this I received your note of Nov. 5th and am right glad to hear that Capt. Whipple acceded to your propositions
"It is an ill wind that blows nobody good" so that if our Cactuses suffer I am glad your pockets will not. I will wait with patience

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

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Rec^d Nov 17
Ans Jan 9

Lancaster Nov. 13th 1855

My dear Doctor.

Without waiting for an answer to - Say, my two last I am down again upon you. — This, is to make some suggestions on a topic I have had some time on my mind. -

According to Prince Salm's division of Cactaceae we have 20 genera all of which are recognized by Lindley excepting Mala cocarpus & Nopalea

I gather from the synonymy of Prince Salm's Cacteae in Hort. Dyck. that Linnaeus described about 15 species under the name of Cactus all of them being included in the present genera of Cereus Mamillaria Opuntia Phyllocactus & Peresc in

Nine of them are among Cerei and as they are more conspicuous than Mamillariae the probability is that his first Cactus was a Cereus which having a priority should be retained. - If we could with certainty determine that his first discovered species belonged to one of the other genera, it should be dropped - probably however several of them were published simultaneously - in which case we could properly drop any one we chose — But instead of doing this may we not adopt another plan?

Prince Salm makes 5 divisions of Cerei viz: 1st Echinocerei Engelm. (of which by the way he gives in a note your generic diagnosis) 2nd Sulcati 3rd Angulati 4th Articulati 5. Radicantes. -

Now it appears, Linnaeus found 4 named species in all these divisions excepting Echinocereus Taking the embryo, as a valid guide in generic distinctions it does appear to me that your Echinocereus is entitled to a higher place in a generic scale than some others that are recognized

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more especially that of Pfeiffera Salm.

I propose that we adopt your generic diagnosis under the name of Cereus or Echinocereus as you prefer and retain Linnaeus' old name for the balance taking Cactus peruvianus as the type.

In our list of American Cacti we would then open Echinocereus or Cereus have

Cactus Linn.

1 Sulcati

Cactus inermis. C. gigantus C. Thurberi

2nd Angulati

Cactus Greggii

3rd Articulati

Cactus variabilis. Lk.

If I was as well acquainted with the bibliography of Cacti as you are, I would not hesitate a moment to restore what I consider according to the ~~gen~~ generally adopted rules of ~~technology~~ terminology the right of Linnaeus to his old name. What say you?

I write because I have nothing else to do.

With sentiments of the highest esteem

I am truly yours

John M. Bigelow

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Rec'd Dec 22
Ans Jan 9 1856

Lancaster Dec. 17. 1855

My Dear Doctor —

I received a letter today from Capt Whipple in which he asks "How are you and Dr. Engelmann progressing toward the completion of your reports? Where are the illustrations for the engraver? Is there any thing I can do for you? Please write soon" &c &c. Your kind letter of Nov. 14th was received in due time accompanied by revised manuscript of Cereus. — It has been now ~~two~~ more than a month since it was written. — I had nothing special to write about since and as I had despatched one to you dated Nov. 12th I had proposed to my self not to write until I had something from you in relation to my last project. — You have doubtless been too busy on more important matters than attending to my vagaries. I enclose today another hasty sketch of O. Bigelovii the common name of which by our Mexican and guides is "Chuq" taken by Mr Campbell our Civil Engineer. I was present when he took it and although rough and hasty it is quite a faithful picture. The plant from which he sketched it was about 4 or 5 feet but I afterwards saw them much taller say 10–12 feet high. This sketch I received from Capt W. today who hopes I will get it in time to be of some service. — It occurs to me that this is a better one than that of Mollhausen. Can you and Roeller make any thing of them? The 1st Vol of P. R. R. Reports is printed and bound in about 650 pages quarto embracing the preliminary report of the Secretary of War and a part of Gov. Stevens Report without engravings or purely Scientific documents. Capt Whipple writes me that the only copy he has been able to lay his hand upon was obtained expressly to send to Baron V. Humboldt of Europe. But that he will remember you and me as soon as he can get more. — When writing of you he always wishes me to send you his kindest respects whenever I write. — Such drawings as you have finished as well as the pines & cones I think it would be well to send

to Capt Whipple immediately — the engravings I suppose will be a more tedious job than the letter press.

Some of your subdivisions of Opuntiae I presume are finished — if they are I should like to get a copy as far as they go. I am in hopes you are nearly done. —

I had a letter lately from Dr. Parry who tells me that Mr. Schott is expected home early in the present month.

Write soon? and I will then not answer Capt. W.'s until I get yours.

With sentiments of the highest esteem
I am truly yours.

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GEORGE ENGELMANN PAPERS

John M. Bigelow

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Rec'd Dec 28th
answ Jan 4th

Lancaster Dec: 22. 1855

My dear Friend.—

I just received the enclosed from Capt Whipple and hasten to send it to you with as little delay as possible. The flower of Op. basilaris was collected by Mr Campbell on the mojave River we went out though on the label he does not give the date. "Op. pubescens" was a provisional name we gave it on account of its pubescent pericarpidity.— I have written some time ago but have not received answer.— I fear you are sick or some accident is the reason.— In a letter I received from Capt W. since I last wrote he says:— "You ought soon to send vouchers for guns & Dr. Engelmanns pay. I fear the Appr.n will run short— I am out of money and depend on Capt Humphreys." Please let me hear from you soon most Respectfully

P.S. Rattan I suppose { J.M. Bigelow }
can make a good figure from the specimen

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Rec'd March 20
Ans. April 19

Op. echinocarpa &
Op. Davisii
a Kennerly i = O. Parryi?

Lancaster March 17. 1856.

My dear friend. —

Yours of March 11th was duly received. You say, that you are inclined to separate O. Kennerlyi, ~~I am~~ (my Colorado Clavatae?) from O. Clavata St. Fe. I have suspected, (from the proximity of locality only however) that this might be your O. Parryi Gill Jour. May it not be so! Or have you specimens of O. Parryi, to make authentic comparisons with? If you have, I do not remember seeing them, while I was with you in St. Louis. If you have adopted it merely from Dr. Parry's description; it would be well to look to it, and avoid, if possible, the unnecessary augmentation of synonymy. — You ask again, if O. Davisii can possibly be the same as O. Echinocarpa! — I think not; for the following reasons:- 1st fruit of O. Dav., though otherwise imperfect, is not much spiny. O. Ech., so very spiny as to give a very characteristic name. 2nd the wood of the two is very different, in O. Dav. it is as solid, or more so, than in O. fruticescens. That of O. Ech. is reticulated, exactly as in O. arborescens, or acanthacarpa. — I am sorry we have lost a specimen of the wood of O. Davisii, which I know was sent to Washington. 3rd The manner of branching is also quite different. O. Echin. branching from one root, or footstalk, like O. arborescens, thus O. Davisii, branching more from the the root, something like this, . 4th Both are wickedly spined, but the barbs of O. Echin are just about the same as O. arborescens; while those of O. Davisii are more strongly barbed, making it much more difficult to handle.
5th The size of the younger branches are larger in O. Echin., being about 1 – 1¼ inches in diameter; while in O. Dav. they are not more than ½ – ¾ inches, a little larger than in O. fruticescens. — The general habit of O. Echinocarpa very much resembles a depauperate, or stunted O. arborescens, not being more than 3 – 4 feet high. O. Dav. is about 2 – 3 feet high, & more resembles a stunted O. fruticescens, excepting that it is so very spiny, & more intricately branched. —

I think Gov. Fisk will not object to paying for the 2nd plate, which you so much need – if you explain to him the necessity for it. – It would have been better, & saved trouble, if it had been made at first, & included in the first voucher. – I hope you will get the engraving to do in St Louis, if it will be any advantage. –

Now about that "encouraging line"? What shall I say to encourage you? If I received pay for my services, as I ought, I could afford to pay you out of my own pocket, which is a sort of <u>substantial encouragement</u>, we all know well how to appreciate. – But instead of that, they required me to make an estimate of the time it would take me to elaborate my report, and I replied, probably 6 weeks or 2 months; unfortunately, I knew little of the arduousness of the undertaking, and so got myself into a scrape by it. – They hold me to my estimate, allowing extra, only, for ~~me~~ my expenses to St Louis. – This is poor encouragement, I know, to be sure, but let us go on with brave hearts, and finish what we have begun. – You, at least, will reap one reward – a good reputation – – Write again soon. –

With sentiments of high regard
I am most Respectfully
Yours. John M. Bigelow

Geo Engelmann M.D.

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Rec'd April 18th
Ans April 19

Lancaster Apl. 15th 1857

My Dear Doctor —

It has been some time since I have heard any thing from you. I fear the multiplication of business will interfere with the rapid progress of our Cactus Report I am however waiting with much patience Mr. Sullivant has commenced to work on my Collection of Mosses & Hepaticae among which they tell me there are several new species. —

What more induces me to write now however is to know whether you will attend the Convocation of the National Medical Association at Detroit which is to be held on the 6th of May next. If you will promise to be there ~~an~~ certainly I will certainly meet you Let me hear from you at any rate in time to fix up for Detroit. I will write to know if we can not meet Dr. Parry there also. Kindest regards to Mrs. Engelmann. Most Resply. Yours

John M. Bigelow

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Rec'd May 20
Ans May 29

Lancaster May 15. 1876.

My Dear Doctor.

I received a letter yesterday from Mr. Scholl enclosing 2 bunches of Spikes from a plant in the Congressional garden which I brought from San Francisco. I obtained it from a gardener there who said he believed it had originally been brought from the neighborhood of Guaymas. Some I had spoken to you of this plant and had several times previously sent you for some bunches of spikes but could not succeed in getting them until Mr. Scholl and the kindness of Prof. Asa Gray sent them. My specimen was transported in a barrel which it nearly filled but the gardener in San Francisco had another specimen in the same plant nearly as large as any specimen of E. Vislizeni that I have seen. Upon comparison ~~that~~ of the spikes that this plant is identical with your E. Bajaviri which surprised me as I had been endeavoring

to make you as well as my self believe that my San Francisco plant was the Mexican C. Sugens. — Enclosed I send you one of the bunches bush mistletoe. You will observe on the specimen I send besides the 5 regular radial spines one more slender irregular outsider near the top of the areola.

Something like this . On the specimen I have here there are 5 regular slender spines arranged irregularly something like this . The specimen from which you made your description of C. Sagitiformis was a much smaller plant than this. —

I received a letter the other day from Pabst. In it he says "Where is the rest of that report?" I have not answered him yet, and do not know how except to echo "Where" In your last letter dated Apl. 17th the same date of Capt Whipple, you say all the material of your Cactus Contributions are fully prepared and you have only to put your hands to it to make it go!! Well do so at once and let us finish with our work

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immediately and in Gray's Manual
"Slide" for a little without cost. Mr. Schott
speaks very highly of your Boundary illustration
of Cacti. — I did not go to the Medical
Association mainly because you nor Parry
would agree to meet me there and Parry pro=
=poses the same as you to meet all at the
Scientific Association in Albany next August
I could have went to Detroit in May without
much inconvenience but I fear it will be hard
to have some in August as it is our very
busy season of the year. But we will
talk more of this by and by. —
I am glad you are going to delay yourself
by a visit to Europe in the summer
your interest in Cactaceae will not thus
be abated and although America is
the native country of this class of plants
yet circumstances has rendered Europe
the best place to study them in. Please
let me hear from you soon on the
subject of the bunch of Spines I sent
I am anxiously looking for the long look.

for manuscripts of the botanical of our Expedition so that I can give more than an echo to Capt. Whipple's Cally. With sentiments of the highest respect I am most respectfully and truly yours. John McDiglow

Geo Engelmann M.D.

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Rec'd July 19
Ans same day

Lancaster July 14. 1856

My dear Doctor,

The first instalment of Cusuttia including Mr. Schott's figure & bunch of spines was welcomed today, the letter sent some days ago referring to specimens collected by Mr Schott has been mislaid and I can not refer to it tonight. I will write again in a few days. I have no doubt but that the plant he figured from & the spine you send is identical with our O. Bigelovii and Dr. Parry's O. prolifera is very nearly allied if not identical also. The fragility of the points in our plant is the same as Mr. Schott's — the ground being literally covered with the broken off points so as to make it very inconvenient to travel among them. I will not fail to make the alterations you suggest as regard to the names of E. Engelmanni & C. variegatus & Chrysocentrus. — as for my truly I do not exactly see the point of objection — your wishes in this respect however will be my law. —

I am truly sorry you have to work over and reduce your fees and sincerely hope you will not be very specially inconvenienced by it — Your time however, now, I am aware must be very precious. —

I shall not be able to meet you at Albany but you can take our place in your route without being delayed more than the time you spend here with me. There is a Rail Road from Cincinnati to the Eastern cities through our place. — Dr. Parry will probably meet you there or at Washington which you will necessarily visit before leaving for Europe. Excuse haste.

Most Respectfully yours &c.

Wm McDegelow

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Recd August 1st

Ans Aug 11

Lancaster O. July 28/57

My Dear Doctor

Your fourth instalment was received today with thanks. The 3rd instalment was duly received some days ago.

I now go back to your of the 26th June. With regard to O. prolifera O. Beyrichii & O. fulgens you will find it hard to distinguish them; because before we seed the fulgens I was satisfied that O. Beyrichii could hardly be separated from O. prolifera. Ours is a very Shining plant but not more so than many others of this Sec. and I think not as much so as O. tessulata and O. Echinocarpa. This shining property resides in the sheathes and I have noticed a great difference in this respect within less or of the year. I think they are deciduous and renewed every year same as the leaves of plants. I am almost certain it is so with regard to O. arborescens which I have

observed at all seasons of the year I was so struck with this difference in its appearance that I once thought when I first saw O. arborescens in its bright array that it was an entirely different plant. This was in early spring at El Paso. Have none of our other collectors noticed this peculiarity? If you make a new name for this or any of these plants do not take "fulgens" or "fulgida" because this whole section with the exception perhaps of O. fruticosus has this peculiarity and some of them in a higher degree at certain seasons of the year.

The extreme fragility of the younger joints is very peculiar & characteristic of these forms (if there are two or 3 of them) and a name indicating this quality would be good, only O. fragilis is not half as fragile as these are. —

But I am really glad you have found it better to alter O. Bigelovii

MISSO
GEORG

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since you have become so prudish as not to let E. Engelmanni stand. It appears to me there is as much impropriety in placing ~~in placing~~ in our publication a Bigelovii as there is an Engelmanni and I can easily substitute either the name of a person connected with our expedition or that of the ~~place~~ locality for the Cereus that now stands in my name. These things at first did not strike me as they seem to do you now. – Your feelings & wishes however in this matter shall be respected and I will make the necessary alterations. The table of Explanations of Plates upto No 21 was sent on to Washington some time ago but I have all the rest of the manuscript with me yet and a copy of the Explanations so that I can make a new & correct table easier than to send on again for the original. I have letters lately

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from Capt W. who is anxious
to get our manuscript into the hands
of the printer soon as he will shortly
leave Washington under orders to
make Buffalo his head quarters.
He proposes also for our House members
to get a Resolution passed ordering
50 copies Extra of the P.R.R. Reports
for the benefit of the Natural History
corps engaged in it – The Reports will
make 5 or 6 large quarto vols. worth
at least 5 dollars each which will
amount to $1250. This in Europe
would come right good to you.
I have sent on a petition to our mem-
bers to get it passed which in
sheer justice should be done
Has Capt Whipple written to you
about it? I expect to hear
from you again very soon
ex cesso scribbly With sentiments
of the highest respect I am
most Respectfully yours
J. M. Bigelow
Dr. Engelmann

PS. I am at fault a little with your headings of Opuntiae you have.

Opuntia Tourn

Subgenus 1 Platopuntia E.

~~A. Sarcocarpeae~~ which I scratch out

§ 1 Grandes

§ 2 Vulgares

§ 3 pubescentes

§ 4 Xerocarpeae

Subgenus 3 Cylindropuntia

§ 1 Clavatae Pf.

over

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Where is subgenus 2.?
Should it be
Subgenus Cylindrosporium?

I like your two general divisions very much. —
Mr. Marcou was very much in favor of making the division of them some what thus
1 Osperma (the flat pointed ones)
2 Cuctodonwin the Cylindric ones
3. Something else for Clavatae

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Rec'd Nov 17 Dec
Ans Nov 21 Jan

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Lancaster Ohio Nov. 17. 1856

My dear Doctor –

Your two notes of 12th & 13th last were both received last evening. The Synopsis of Am. Cact. was also received a week or two ago. –

You ask "why my report on Botany was not sooner written?" I can only answer by saying that I had not time to do it. My Report was written and handed over more than two years ago; while our Report on Cactaceae furnishing me the means of making the necessary corrections, was not finished until near the end of August last when it was immediately put into the hands of the printer.

It must be remembered also that the whole printing of our Reports was ec=
=layed a long time in consequence of not having this ready, and I was ashamed to to ask them to delay still longer

as I might have done had we not already delayed the work too long.
I am sorry it is so faulty, but I do not see now how to amend it except by an explanatory note of the cause of deficiency. — I have no excuse for the hurried & careless copy of the manuscripts except that some of it was written at a season of the year when my professional engagements were such as to occupy nearly my whole time. — After seeing your Synopsis I should have excluded the abortive attempts of mine, had you not done it. — In my turn I am horrified at the idea of the accusation of my saddling you with indefensible positions. — If I know myself I have not. — After all, now you have so reluctantly allowed your name to go upon it, I do hope the Report will not be so bad as

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you disconsolate fears would lead you to apprehend. — You must allow a little for my greenness and remember that even yourself in Emory's Report 1848 adopted things probably more indefensible than will result in our Report from my carelessness and inattention. For instance No 1 Mamillaria aggregata "proliferous in the highest degree" is in my mind beyond all doubt Cereus Mojavensis. No 2 Mam. fasciculata I believe is Cer. Fendleri I have very little doubt also that No 9. Opuntia Stanleyi is what we have figured & named in our Report O. Whipplei. Nos 7-8 and 11 are in all probability myths. A great deal must be allowed for the inaccuracies of the delineator as we know that No 10 is a miserable caricature of the stripped fruited Cer. Greggii & No 6 is very far from being correct — — You most certainly must have had the horrors when you wrote

if my head gave been harnassed to one of Dr. Kane's sure-saddles on the hummocky ice floes of Smiths Strait Dec. 21st the ink of your pen could hardly have flowed more smoothly than on the present occasion!!!
you must excuse the <u>beast</u> I have made of myself because you first showed the <u>roof</u> yourself – But what is the use of worrying ourselves wild beast like? If you will kill off or cure the sore head of your old bear I will smother the Wolf in me And yet notwithstanding all-should you come time to <u>growl</u>, (haply the Atlantic is now between us) like the <u>Grizlies</u> I have so often met on the plains of Texas & New Mexico while hunting our favorite objects of research, I shall never cease to respect the (in his happy moods) good Dr. Engelmann and shall always remember with pleasure the many happy hours I have spent and the almost interminable friendly correspondence in assisting to unravel the intricacies of our thorny subject. – May God grant that your journey to Europe be a happy & prosperous one, and that it redound as much to your honor as to your felicity – with sentiments of the highest respect I am your cordial friend
J. M. Bigelow

Rec'd Jan 28th
Ans March 31

Lancaster January 27th 1859.

My Dear Doctor.

I have been waiting so long to hear from Dr. Torrey, before I answered your last kind letter, that it is mislaid & I can not now refer to the date. — I have not yet received the plates of Whipple's Botany as was promised me long ago. — Dr. Torrey wrote me after he had finished the manuscripts of the Pg. Botany that having been so much engrossed with its elaboration the plates intended for me in his possession had been mislaid & forgotten &c. Seen about the time I received your letter I got one again from him acknowledging his neglect & promising again to despatch them to me immediately. — I then concluded I would wait until I received the plates before I would write you. When he first wrote me that he would send the plates immediately & they did not come I concluded they had been lost until I got his last letter. — I have not heard from him or them since and if he sends them

when he last promised (now 6 weeks or 2 months ago) they must be surely lost by the way. — I will write him again — As soon as I get my plates I will let you know. — Until I received your letter I did not know where to address you having heard of you only at Washington & New York since your safe return from Europe. — I recently received a letter from Mr. Schott saying that he had not lately heard from you and was not aware what you were doing in your favorite departments of the Botanical world. — Times are rather dull. — I am plodding along in the occasionally bloody path of medicine & surgery in a sort of routine for its emoluments — no not that exactly but just about enough to make myself & family a decent living. —

I amuse myself occasionally with studying the physical geography of the great West. — Alas how little of it is known to the would be great politicians

at the seat of government.
I should greatly deplore the passage
by both branches of Congress any of the
Pacific Railroad bills I have yet seen
unless killed by the Executive Veto. —
Any of them in my opinion would
defeat the construction of the road for
the next 50 years at least. — It should be
be built by the War Department of the Govt.
and private interest & capital ought not
to have anything to do with it, except
to use, & pay for the use of the road
after it is built. Unfortunately all of
our public men have a directly
contrary opinion —

With sentiments of the highest regard
I am ever your faithfully
John M. Bigelow

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